

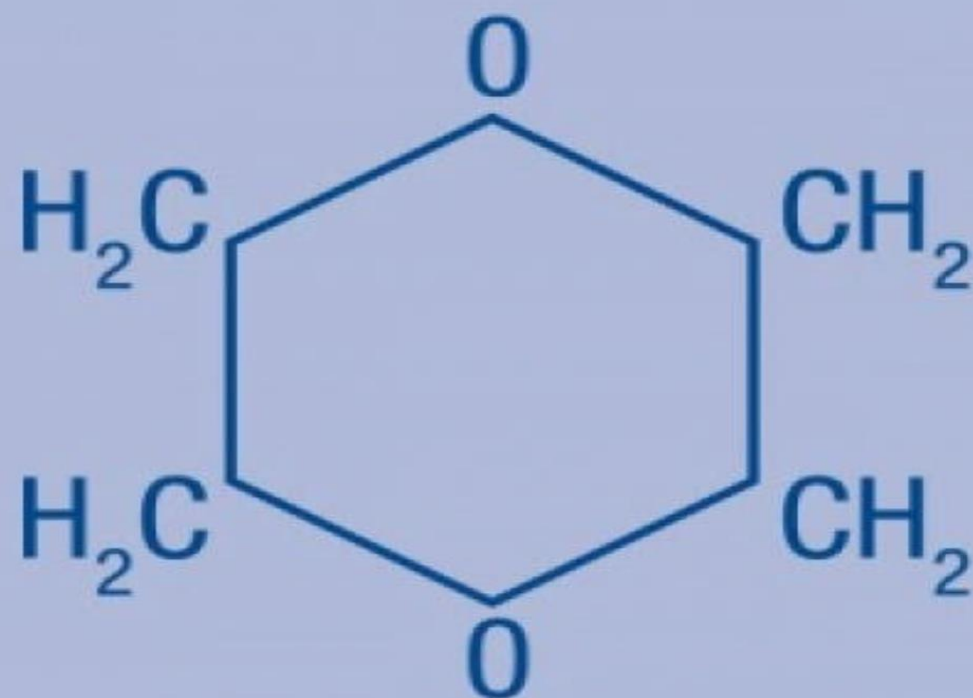
The background of the slide is a light gray gradient, decorated with numerous realistic water droplets of various sizes. Some droplets are large and prominent, while others are small and subtle, scattered across the top and bottom edges of the frame.

1,4 DIOXANE AND ENVIRONMENTAL JUSTICE COMMUNITIES IN CALIFORNIA

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CALIFORNIA COMMUNITIES AGAINST TOXICS

1,4 DIOXANE: A MOLECULE THAT LIKES WATER



1,4-dioxane

1,4 DIOXANE: WE KNEW IT WAS TOXIC... FOR DECADES

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Critical Effect	Point of Departure	UF	Chronic RfD
Liver and kidney toxicity Chronic oral male rat study Kociba et al. (1974)	NOAEL: 9.6 mg/kg-day	300	0.03 mg/kg-day

I.A.2. PRINCIPAL AND SUPPORTING STUDIES (ORAL RfD)

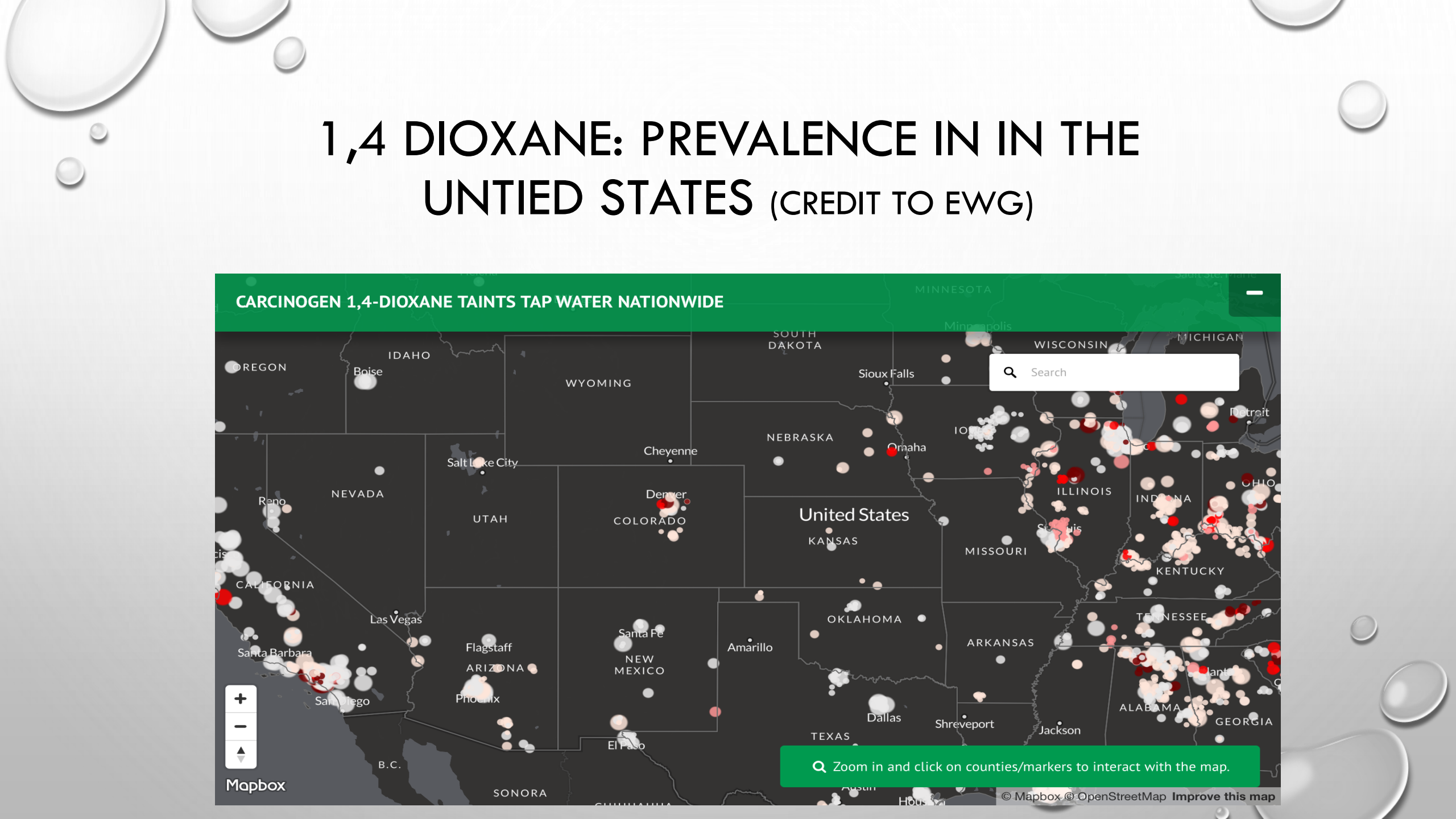
Liver and kidney toxicity were the primary noncancer health effects associated with exposure to 1,4-dioxane in humans and laboratory animals. Occupational exposure to 1,4-dioxane has resulted in hemorrhagic nephritis and centrilobular necrosis of the liver ([Johnstone, 1959](#); [Barber, 1934](#)). In animals, liver and kidney degeneration and necrosis were observed frequently in acute oral and inhalation studies ([JBRC, 1998a](#); [Drew et al., 1978](#); [David, 1964](#); [Kesten et al., 1939](#); [Laug et al., 1939](#); [Schrenk and Yant, 1936](#); [de Navasquez, 1935](#); [Fairley et al., 1934](#)). Liver and kidney effects were also observed following chronic oral exposure to 1,4-dioxane in animals ([Kano et al., 2009](#); [JBRC, 1998b](#); [Yamazaki et al., 1994](#); [NCI, 1978](#); [Kociba et al., 1974](#); [Argus et al., 1973](#); [Argus et al., 1965](#)) [see summary Table 4-25 in the *Toxicological Review of 1,4-Dioxane* ([U.S. EPA, 2013](#))].

1,4 DIOXANE: HOW TOXIC IS IT?

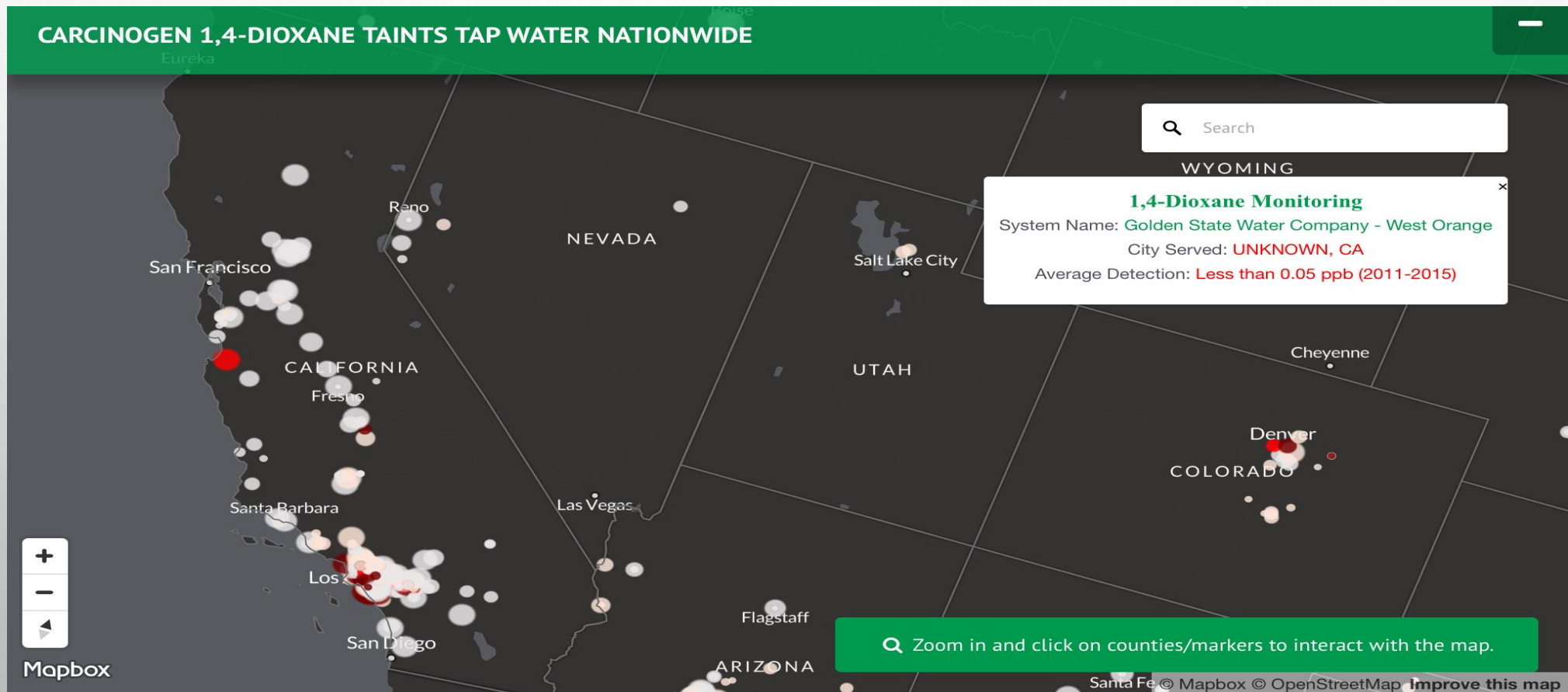
State	Guideline (µg/L)	Source
Alaska	77	AL DEC 2016
California	1.0	Cal/EPA 2011
Colorado	0.35	CDPHE 2017
Connecticut	3.0	CTDPH 2013
Delaware	6.0	DE DNR 1999
Florida	3.2	FDEP 2005
Indiana	7.8	IDEM 2015
Maine	4.0	MEDEP 2016
Massachusetts	0.3	MADEP 2004
Mississippi	6.09	MS DEQ 2002
New Hampshire	0.25	NH DES 2011
New Jersey	0.4	NJDEP 2015
North Carolina	3.0	NCDENR 2015
Pennsylvania	6.4	PADEP 2011
Texas	9.1	TCEQ 2016
Vermont	3.0	VTDEP 2016
Washington	0.438	WA ECY 2015
West Virginia	6.1	WV DEP 2009

1,4 DIOXANE: PREVALENCE IN THE UNITED STATES (CREDIT TO EWG)

The map displays the prevalence of carcinogen 1,4-dioxane in tap water across the United States. The map is titled "CARCINOGEN 1,4-DIOXANE TAINTS TAP WATER NATIONWIDE". It shows a dark background with numerous red and white circles of varying sizes, representing the concentration of 1,4-dioxane in tap water. The circles are most densely packed in the Northeast, particularly around New York City and Philadelphia, and in the Midwest, particularly around Chicago and Detroit. Other areas with significant contamination include the West Coast, particularly around San Francisco and Los Angeles, and the South, particularly around Atlanta and Jacksonville. The map includes a search bar in the top right corner and zoom controls in the bottom left corner. A green banner at the bottom of the map reads "Zoom in and click on counties/markers to interact with the map." The map is credited to Mapbox and OpenStreetMap.



1,4 DIOXANE IN CALIFORNIA: IT IS VERY PREVALENT IN WATER SYSTEMS (EWG MAP)



1,4 DIOXANE IN LOS ANGELES COUNTY: EXTREMELY PREVALENT!

Table 1: Large U.S. water systems with high average levels of 1,4-dioxane contamination

WATER SYSTEM	LOCATION*	POPULATION SERVED	AVERAGE LEVEL OF DETECTION, IN PARTS PER BILLION (YEARS TESTED)	FACTOR EXCEEDING EPA'S NEGLIGIBLE RISK LEVEL OF 0.35 PARTS PER BILLION (ROUNDED TO A WHOLE NUMBER)
CALIFORNIA				
Tract 180 Mutual Water Company	<i>Cudahy/Los Angeles County</i>	14,000	4.9 (2011-2015) ¹	14x
California Water Service Company—East Los Angeles	<i>East Los Angeles</i>	150,446	3.83 (2010-2015) ²	11x
Bellflower—Somerset MWC	<i>Bellflower/Los Angeles County</i>	46,000	3.19 (2011-2015) ³	9x
Liberty Utilities—Bellflower—Norwalk	<i>Parts of Bellflower and Norwalk/Los Angeles County</i>	72,884	2.67 (2010-2015) ⁴	8x
Norwalk Water Department	<i>Norwalk/Los Angeles County</i>	18,372	2.37 (2011-2015) ⁵	7x

1,4 DIOXANE: NOTIFYING THE PUBLIC

In the absence of federal regulation, some states have set water quality limits, guidelines and notification requirements related to the chemical:

- *California*: Water utilities must notify state government agencies whenever 1,4-dioxane is detected at concentrations above 1 ppb.²⁷
- *Colorado*: 1,4-Dioxane levels in groundwater should not exceed 0.35 ppb.²⁸
- *Maine*: The drinking water maximum exposure guideline is 4 ppb.²⁹
- *Massachusetts*: The non-enforceable drinking water guideline is 0.3 ppb.³⁰
- *New Hampshire*: The reporting limit for public water supplies is 0.25 ppb.³¹
- *New Jersey*: The groundwater quality standard is 0.4 ppb.³²
- *North Carolina*: The groundwater quality standard is 3 ppb and the surface water supply standard is 0.35 ppb.³³

More states should not wait for the federal government, but move forward to set their own health-protective limits and guidelines for 1,4-dioxane in drinking water and groundwater. States that have only non-enforceable guidelines should instead create legal limits.

1,4 DIOXANE: WHAT CAN CONSUMERS DO?

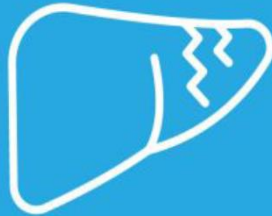


1,4 DIOXANE: PUBLIC HEALTH EFFECTS DEMAND THAT WE ACT!

Here are some of the health risks associated with 1,4-dioxane in drinking water and consumer products:



Cancer



Liver and
Kidney Damage



Lung Irritation



Eye and Skin
Irritation